

VIRGINIA WILDLIFE

OCTOBER 1993

ONE DOLLAR







The annual fall bird-banding operation at Kiptopeke on the Eastern Shore collects invaluable information on our neotropical migratory birds. See story beginning on page 24. Photo by Lynda Richardson.

VIRGINIA WILDLIFE



Opposite: Green-backed heron, one of the more common, but inconspicuous visitors to our coastal marshes. Read more about the complex relationship our birds have with coastal marshes beginning on page 13. Photo by John Heidecker.

Cover: Weller's salamander; photo by R.W. VanDevender.
Back cover: Chincoteague National Wildlife Refuge; photo by Rob Simpson.

Features

4 Forest Giants by Joseph C. Mitchell
They may look small and unassuming, but don't let that fool you. These salamanders are the giants of our hardwood forests when it comes to the role they play in sustaining the health of their environments.

13 A Bird's Eye View...of Coastal Wetlands
by Dana Bradshaw
The lives of at least 150 species of birds living in the Chesapeake Bay are bound to the health and complexity of our coastal wetlands. The more we learn, the more we realize how easily our actions can threaten their survival.

24 Sojourners by Sarah White
Virginia's newest state park at Kiptopeke on the Eastern Shore is a rare place to observe sky-weary travelers on their way south for the winter.

October Journal

31 News	33 Photo Tips
32 Recipes	34 Boating Safety

Dedicated to the Conservation of Virginia's Wildlife and Natural Resources





Forest Giants

They may look small and unassuming, but don't let that fool you. These salamanders are the giants of our hardwood forests when it comes to the role they play in sustaining the health of their environments.

by Joseph C. Mitchell

The forests of Virginia harbor a rich diversity of animal life. Among the most spectacular are terrestrial salamanders of the genus *Plethodon*. Because they are both predators of insects and other invertebrates, and prey for mammals, birds, and snakes, they play a pivotal role in the energy dynamics of forest ecosystems. Few people, other than perhaps a handful of biologists, realize that these small vertebrates are so important.

A total of 27 species in this genus is currently recognized east of the Mississippi River in North America. Of these, 15 are known to occur in Virginia. Although most of these are found in the southern Appalachian Mountains, several are widely distributed over large portions of eastern North America and the Commonwealth. Several examples nicely illustrate the diversity of this group of salamanders and the differences in their geographic distribution.

The most widespread species in Virginia is the red-backed salamander (*Plethodon cinereus*). This small, less than 5-inch long amphibian occurs in almost all counties except for those bordering Kentucky and Ten-

nessee and in the lower portion of the middle peninsula. This salamander exhibits two color phases, one with a red to yellow-brown stripe along its back that narrows along the top of the tail (the red-backed

phase), and one lacking a stripe on a dark gray to gray brown body (the lead-backed phase). The bellies of both are mottled with black and white, giving them a salt and pepper effect.



Finding terrestrial salamanders in Virginia's forests often requires looking under rocks and logs. Biologist Kurt Bullmann (opposite) has discovered a Cow Knob salamander (*Plethodon punctatus*); photo by Lynda Richardson. Silhouette: White spotted slimy salamander (*Plethodon cylindraceus*); photo by Lynda Richardson. Above: Red-backed salamanders (*Plethodon cinereus*) in Virginia occur in two color phases: one with a red to yellowish stripe (the red-backed phase), and one without a stripe (the lead-backed phase).

Gary Sargent

The widespread species I grew up calling the slimy salamander was recently discovered to be not one, but 13 different species throughout its North American range. Three of them occur in Virginia. All are black with small white spots or silvery to brassy flecks and reach a total length of about eight inches.

The Atlantic coast slimy salamander (*Plethodon chlorobryonis*) in the southeastern third of the state has small, slightly brassy to white spots on its back and sides. The white-spotted slimy salamander (*Plethodon cylindraceus*) in the Piedmont, Blue Ridge, and Ridge and Valley north of the New River has larger white spots on the back and light spotting on the sides. The northern slimy salamander (*Plethodon glutinosus*), found in southwestern Virginia extending northward along the border with West Virginia through Highland County, has large brassy spots on its back and moderate white spotting on its sides. It sometimes takes a practiced eye to tell these three similar species apart.

Three species of plethodontids are limited in their Virginia distribution to the southwestern portion of the state. All of these are high elevation salamanders.

Jordan's salamander (*Plethodon jordani*) is found on forested mountains and ridges largely between the

Clinch and New Rivers. This seven-inch amphibian is uniformly dark gray in the Virginia portion of its range.

Weller's salamander (*Plethodon welleri*) is limited in the Commonwealth to forests in the Iron Mountains, including Mt. Rogers and Whitetop. It is a small species (3.5 inches total length) with silvery to gold interconnected blotches on a black body.

Perhaps the most spectacular species of this group in Virginia is the Yonahlossee salamander (*Plethodon yonahlossee*). This 8-9-inch salamander has a dark gray to black head with white flecks, a large swash of red along its back and anterior half of its black tail, white on the lower sides, and a gray to black belly. Most known locations are in the Blue Ridge Mountains south of the Blacksburg area.



Above: The Yonahlossee salamander (*Plethodon yonahlossee*), is a spectacular denizen of mature, moist hardwood forests in the southern Blue Ridge Mountains; photo by Rob Simpson. Below left: Atlantic coast slimy salamander (*Plethodon chlorobryonis*) from the southeastern Coastal Plain. Below: Northern slimy salamander (*Plethodon glutinosus*) from southwestern Virginia.



R.W. VanDevender



R.W. VanDevender

Some of the species in this genus have highly restricted distributions. Two that occur in Virginia are restricted to small segments of the northern Blue Ridge Mountains. The only place on earth the Peaks of Otter salamander (*Plethodon hubrichti*) occurs is from the Peaks to about Thunder Ridge Overlook on the Blue Ridge Parkway, some 12 miles north. It is a small salamander, reaching a total length of about 5 inches. Color and pattern vary but most are dark brown to nearly black with a variable amount of brassy, and sometimes greenish, flecking on the back and tail. The sides have a few small, white spots and the belly is uniform black.

The Shenandoah salamander (*Plethodon shenandoah*) has the most restricted range of any plethodon in the world. It is known from only three mountain slopes in Shenandoah National Park. This small, about 4.5-inch salamander is very similar to the red-backed salamander in having a striped phase and an unstriped phase. The reddish to yellowish stripe is narrower and the edges are wavy compared to the wider and straight-edged stripe on the red-backed salamander. Identifying these two is tricky enough, as both occur together in some areas, but one has to sometimes rely on differences in physical structure, like

head shape, to tell the unstriped phases apart. And to make matters worse, these species hybridize in some of the contact zones!

The Shenandoah salamander is protected under the U.S. Endangered Species Act and the Peaks of Otter salamander is a candidate species. The Virginia Department of Game and Inland Fisheries lists the Shenandoah salamander as endangered and the Peaks of Otter salamander as a species of special concern. Because the entire ranges of these two species of salamander occur within the Commonwealth, they are properly termed Virginia endemics.

Another species with a very re-



Jordan's salamander (*Plethodon jordani*) is associated with high elevation hardwood and spruce forests on Mt. Rogers and other mountains in southwestern Virginia. It is the least colorful of a complex species group, most of which occur in western North Carolina; photo by Rob Simpson.

stricted distribution is the Cow Knob salamander (*Plethodon punctatus*). Most of its range is above 3000 feet on Shenandoah Mountain in Augusta and Rockingham counties, Virginia and Pendleton County, West Virginia. The white spots on this black, 6-inch salamander are concentrated along its sides, leaving the back nearly spotless. Cow Knob salamanders are easily confused with white-spotted slimy salamanders with which they occur in some areas. Although it is another candidate for federal listing, the Cow Knob salamander is afforded some protection by occurring completely within the George Washington National Forest.

All of the salamanders in the genus *Plethodon* are tied to the forest floor habitat. Some are extremely abundant and some are rare even in areas where they occur. Finding these animals requires being in the forest under the right conditions: this means spring or fall when the forest floor has a high moisture content. They are found under surface objects during the day and on the surface at night when the atmosphere is moist. When surface conditions are dry, these animals are underground and nearly impossible to find.

Just how abundant these salamanders can be was illustrated by a



David Liebman

The white spotted slimy salamander (*Plethodon cylindraceus*) (left) is found in the Virginia Piedmont and Blue Ridge Mountains. Sharing the same habitat with the Cow Knob salamander, the two species are often hard to tell apart. The white spotted slimy seems to thrive in rocky areas associated with hardwood and hemlock forests, and we now know their habitat is a three-dimensional one, which includes not only the surface of the forest floor, but also the caverns of the rocky substrate.



R. W. VanDevender

study in Massachusetts. The biomass (sum of the body weights of all the individuals in a specified area) of red-backed salamanders in a patch of hardwood forest was determined to be more than *twice* that of all the small mammals and resident birds. This single fact tells ecologists that red-backed salamanders play important roles in the dynamics of forest ecosystems. They consume large numbers of small prey and in turn are eaten by many types of predators. There are places in Virginia's forests where I have found this species to be incredibly plentiful. The abundance of other species of *Plethodon* varies considerably, but all occupy places where their population sizes can reach amazing numbers.

The primary habitat of plethodontids consists of the leaf litter, humus, and soil layers in mature hardwood forests. Such forests provide a moist microhabitat with lots of cover and prey. The hardwood

canopy provides the source of leaf litter in the fall which eventually decomposes, and shade in the summer which helps to retard loss of soil moisture. The best places to find these salamanders are in older forests with lots of decaying logs, rocks, and pockets of moist humus. Surface cover objects are used by these salamanders for shelter, territories, egg laying, and protection against drying surface conditions. Forests that provide little in the way of cover, humus, and soil moisture harbor few *Plethodon*. That is why these salamanders seldom occur in places where hardwood forests have been converted to loblolly or white pine stands.

The numerous species of *Plethodon* are united in the way they reproduce. Unlike most other amphibians, none of these salamanders must find open water in which to lay their eggs. Most amphibians go through an aquatic larval phase and undergo metamorphosis in order to

Three salamander species of special concern occur in high elevation hardwood forests in Virginia. Timbering operations has caused conservationists to become concerned about their future. **Weller's salamander** (*Plethodon welleri*) (*above*) occurs only in the Mt. Rogers and Whitetop Mountain region of southwestern Virginia. The **Cow Knob salamander** (*Plethodon punctatus*) (*top right*) occurs only in the George Washington National Forest and is a candidate for federal listing. The **Peaks of Otter salamander** (*Plethodon hubrichti*) (*right*) occurs only in a small segment of the Blue Ridge mountains. It, too, is a candidate for federal listing under the U.S. Endangered Species Act.

enter the terrestrial world. The dozen or so eggs produced by species in the genus *Plethodon* are deposited in decaying logs or attached to the undersurfaces of rocks.

Oviposition occurs in about June. Females often stay with the eggs until they hatch. All development takes place within the eggs, including metamorphosis, so that the emerging salamanders are already in the adult form.

Salamanders in the genus *Plethodon* are known to live as long as 20 years in the protected environment of captivity, so would be expected to live 10-15 years in the wild. Females apparently reproduce each year, but produce only a small number of eggs. Survivorship rates are unknown for these animals, but like most small vertebrates, they are likely to be lower for juveniles than adults. Populations with these life history traits rebound slowly after declining.

A remarkable fact about these terrestrial salamanders is that each individual spends its entire life in a patch of forest less than 10 x 10 meters, usually much less. Several studies have shown that they move only a few meters their entire lives and can be found repeatedly under the same rocks.

This fact has serious consequences for long-term population survival. Plethodontid salamanders cannot run or fly away in the face of timber-cutting operations or urban development. Some die from being crushed under heavy machinery and others die slowly from changes that take place in the surface environment. Some hang on for a long time, but as has been shown in North Carolina, populations will decline to about 30% of

their original size or disappear altogether when the forest cover is removed. A timber harvesting rotation of 80-100 years may give a salamander population just enough time to fully recover, only to be knocked back again.

How can you help these spectacular and ecologically important animals survive in your area? Those of you without hardwood forests on your property can support national and state forest and park management plans that stress protection of biodiversity. Salamanders are among the species not historically considered in forest management, but that is changing.

For those with forested lands, you could make sure that at least some of your forests are allowed to reach old growth status and let nature's course (e.g., natural death, log decay) take place, rather than harvesting all the trees. In fact, landowners participating in Virginia's Forest Stewardship Program may already be ahead of the game (see the December 1993 issue of *Virginia Wildlife* for details) by encour-



R.W. VanDevender



Lynda Richardson



The salamander with the most restricted range of any vertebrate in Virginia is the **Shenandoah salamander** (*Plethodon shenandoah*). It occurs only on three mountain slopes in Shenandoah National Park. Like the red-backed salamander, which occurs in the same area, Shenandoah salamanders possess two color phases, one with a stripe and one without. Telling a red-backed salamander from a Shenandoah salamander can be a problem for those with untrained eyes, especially since both species occur together in some areas. This species is threatened with extinction from several natural forces and is listed as endangered under the U.S. Endangered Species Act; photo by David Liebman.

aging landowners to manage their forests for multiple purposes while preserving the integrity and biological fabric of the land.

Plus, a recent Virginia study findings that the three top reasons for owning forested land: preserving nature, maintaining scenic beauty, and viewing wildlife, suggest that many people are already managing their forests in ways that protects the existence of habitat for some species

of plethodontid salamanders.

Preserving forest habitat for these animals is often consistent with management for other, more traditional species. The only caveat I'd add about management with salamanders in mind is that consideration should be given to letting some of your forests reach old age status. You may be amazed at the kinds of life awaiting discovery in these places.

The decline of amphibians has received worldwide attention. We are fortunate here in eastern North America to have few population decline problems that we cannot identify. Most of the continuing population declines of amphibians in Virginia can be directly related to habitat loss or alteration. Acid rain may also be causing declines of some species in some areas, although this relationship has not been well studied.

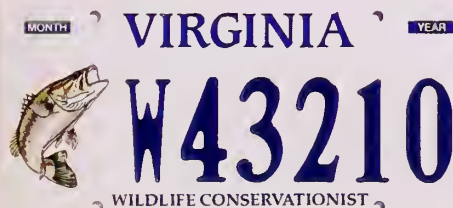
Private landowners have management tools already available to them to help make sure that these spectacular animals will remain a part of Virginia's living fauna for the long term. All one has to do is incorporate the appropriate habitats into management plans and act accordingly.

Aldo Leopold was the first, I believe, to say that the first rule in tinkering with natural habitats is to save all the pieces. Salamanders may be one of the smallest pieces in the complex natural puzzle of our hardwood forests, but they are as vital to its strength and as vulnerable to change as the most delicate lady's slipper or mightiest oak in our woods. □

Joe Mitchell teaches conservation biology at the University of Richmond and was the principal researcher on VDGIF's reptile and amphibian survey.

Put Swimming Fish on your walls!

The Virginia Department of Game and Inland Fisheries has produced two full-color fish identification posters. Just released is a 21 1/4" X 34" poster of 24 species of saltwater fish in Virginia. The second is a 21" X 36" poster of 23 freshwater game fish in Virginia. Each is available for only \$8! Specify which poster you'd like and send your check (made payable to the Treasurer of Virginia) to: Fish Poster, VDGIF, P.O. Box 11104, Richmond, VA 23230-1104.



Give Wildlife A Ride

Why not show your concern for wildlife by ordering a Wildlife Conservationist license plate from the Department of Motor Vehicles? Choose either the largemouth bass or mallard license plate featured here, and help generate money to help the Virginia Department of Game and Inland Fisheries' fund wildlife conservation management and research projects. For ordering information, see gray card in this magazine.

Preserving in bronze what we're losing in the wild

An Endangered Species Series by Turner Sculpture



Capturing the essence of Virginia's endangered species in bronze, David Turner of Turner Sculpture has completed the second in his limited edition series to raise funds for Virginia's Nongame and Endangered Species Program.

This time, David has captured in bronze one of Virginia's rarest mammals, the Northern flying squirrel. An elusive, elf-like spirit of our mountaintop spruce forests, this tiny squirrel weighs no more than five ounces and is known only to three locations in Virginia. Strictly nocturnal, it emerges from its nest of shredded bark, lichens, and moss once darkness has fallen and glides silently from tree to tree, its outstretched feet unfurling the parachute-like flaps of skin attached to each wrist and ankle.

David Turner's 7" high sculpture of a Northern flying squirrel (photo approximates actual size) is poised for flight on an old-growth snag covered with the lichens and bracket fungus which make up a large part of its diet.

Like the bronze sculpture of the Bewick's wren also featured on this page (now sold out), a limited edition of 200 Northern flying squirrels are being cast and sold solely to benefit Virginia's Nongame and Endangered Species Program, the program responsible for the management and protection of all the Commonwealth's rare and endangered wildlife. The money raised from the sale of these two sculptures will provide the program with over 1/10th of its present operating budget.

The Northern flying squirrel sculpture has a purchase price of \$325. Turner Sculpture will receive \$175 to cover their production costs, while the remaining \$150 will be sent to the Virginia Department of Game and Inland Fisheries as your contribution to Virginia's Nongame and Endangered Species Fund. A tax advisor should be consulted regarding the personal tax deductibility of this contribution. Each piece sold will include a certificate of origin and a letter confirming your contribution to the future of Virginia's wildlife.

You may order the Northern flying squirrel obby sending a \$325 check for each signed and numbered sculpture to:

Turner Sculpture, Box 128, Onley VA 23418. For credit card orders, call: 804/787-2818. Order by December 15 for delivery by Christmas.

Next month, be on the lookout for David's third piece in the series, featuring the piping plover of our coastal beaches.

This sculpture promises to be another collector's item you simply won't be able to resist!




Bewick's wren (height: 12 inches) by David Turner.



TURNER
SCULPTURE



An aerial photograph of a coastal wetland. The landscape is a mosaic of vibrant green grassy islands and winding, shallow water channels. The water reflects the sky, which appears overcast. In the distance, a thin line of trees marks the horizon. The foreground shows a large, dense patch of green grass on the left, with a water channel curving around it. The water is calm, showing clear reflections of the surrounding vegetation and the sky.

A Bird's Eye View... of Coastal Wetlands



“When land does well for its owner, and the owner does well by his land; when both end up better by reason of their partnership, we have conservation. When one or the other grows poorer, we do not.”

—Aldo Leopold.

By Dana Bradshaw

Coastal marshes, like cypress swamps, beaver ponds, and hundreds of less obviously wet habitats, have the unfortunate distinction of being classified as wetlands. Wetlands were, until just recently, synonymous with wastelands, or "lands that should be converted to a more useful purpose."

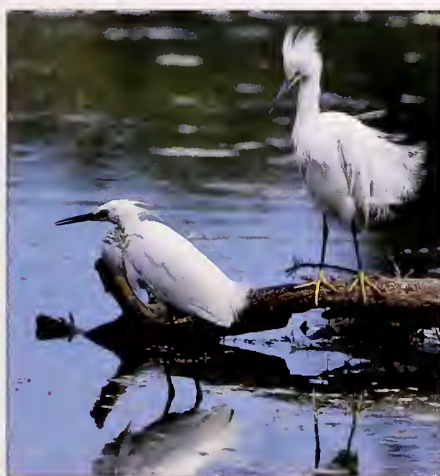
In the last 200 years, over 50 percent of the coastal wetlands in the lower 48 states have been destroyed. For almost all states, wetland losses have been directly related to population density, with urbanization accounting for over 90 percent of human-related losses. The mid-Atlantic coast alone experienced a 50 percent increase in the number of people living along the shores of the Chesapeake Bay between 1950 and 1986, with a follow-up projection that this population will increase by at least another 2.6 million, or 20 percent, over the next 30 years.

As natural resource regulatory agencies go, our authority falls short of regulating how many people exist in a given area, but we do have the ability to pass judgment on how these people alter the environment. The missing link, however, has often been information on the true value of certain environments, which would have enabled us to more precisely evaluate the effects of activities in these environments. Wetlands fall into this category, and coastal salt marshes are a good example of a natural community that has been evaluated for too long on the basis of what it can provide for us, rather than on its inherent value as a natural community.

Most people know that salt marshes are among the most productive ecosystems on earth. They recycle critical nutrients, protect our coastline from erosion, support and protect fisheries, and are an essential link in the chain of water quality control. Millions of dollars each year are spent from the sale of firearms, ammunition, and duck stamps to perpetuate the quality and quantity of our nation's marshes for water-

fowl habitat. Yet, one of the poorest known and least studied of the values of coastal marshes has been that of habitat for non-commercial animal species. And now, as more and more work is being conducted in this arena, some surprising discoveries are being made with regard to

The lives of at least 150 species of birds living in the Chesapeake Bay are bound to the health and complexity of our coastal wetlands. The more we learn, the more we realize how easily our actions can threaten their survival.



John Heidecker



Susan M. Glascock

Great egrets (opposite) seem to be increasing along our inland swamps and rivers; however, approximately 60% of their population resides in the towering pine trees of urban backyards, resulting in inevitable human/wildlife conflicts. The snowy egret (top) is largely confined to several mixed heron colonies on the Eastern Shore barrier islands, and tends to favor tide pools and shallow "guts" for foraging. The clapper rail (above) forages on crabs and other invertebrates from the low marsh zone to the high marsh zone. Page 13: photo by Susan M. Glascock.

the interrelationship between marshes and their wildlife components.

For example, when we think of birds, we normally associate them with trees. So, when we consider the value of marshland, few people attribute much significance to these habitats for birds other than for ducks and geese. But, in fact, the birdlife of a coastal salt marsh is as unique and dependent upon that habitat as is the birdlife of a mature forest. Each marsh has its own unique bird "personality," depending on the size of the marsh and the complexity of its habitat.

Like forests, marshes host a diverse community of birds which are best understood in terms of how they use the marsh. These birds can be thought of as representing four different user groups. First there are the Resident Breeders, birds which actually nest within the marsh. These include marsh wrens and marsh hawks, as one might expect, but also some sparrows and other songbirds, as well as rails, ducks, and other species.

Next are the Resident Users, birds which breed locally outside the marsh but spend much of their time

using the marsh as a foraging area. The herons and egrets, as well as some of the swallows, fit into this category. These birds require very little of the habitat in a marsh for nesting, but marshes provide an abundance of food sources they need.

Transient Users, on the other hand, generally do not breed either locally or within the marsh, but use marsh habitats extensively during migration as they make their way up and down the coast. Shorebirds make up the majority of species in this user group.

And finally, we can categorize another group of birds as Associated Users. These are species frequently seen over or around marshes, but do not generally depend on the marsh proper for food. Instead, they feed on small fish and other prey items most frequently found in the open waters adjacent to marshes. Ospreys, fish crows, and many of the gulls and terns serve as examples.

How representatives from each of these groups come together to make up a particular marsh's bird community depends at least partially upon the size and makeup of the marsh. Small marshes, as you might expect, only support a few species simply because of the lack of sufficient nesting and foraging area. Therefore, large marshes are required if we are to expect to find representatives of all marsh-using species within a given marsh. However, "the bigger the marsh" does not necessarily mean "the better the birding." Marshes vary extensively in their vegetational components as well as in other physical characteristics, all of which tend to influence the bird community.

If you can imagine dissecting a marsh to look at its functional anatomy, you can readily see what it is that gives each marsh its unique physical characteristics. Marshes can be thought of as having four functional components.

Working landward from the open water, the *water components* form the first functional set of habitats. These include the open water around marsh edges, the associated mudflats visible at low tide, and any tide pools or guts that may be present at low tide. Look for the sandpipers and plovers here when you ease your boat out of the marina and head for the open water.

In a spring and summer study of 20 salt marshes along the lower



Chesapeake Bay, overall bird abundance was highest in this zone due to the large number of migrating shorebirds stopping to feed on the mudflats and in tide pools. Hundreds of thousands of shorebirds depend on these coastal marsh tide



Rob Simpson



Susan M. Glascock

The *willet* (top) is common in the upper beach zones of the barrier islands and coastal marshes of the lower Bay. Taking advantage of the cover in a marsh, it usually hides its nest beneath a bush or a canopy of grass.

Teeming with countless numbers and kinds of invertebrates (like the *fiddler crab*, above) marshes provide food for many larger marsh birds such as *clapper rails* and *night herons*.

Marshes can be amazingly diverse areas (above). Small shrub thickets provide nesting and perching sites for tree nesters such as *red-winged blackbirds* and *song sparrows*. Tide pools and narrow "guts" or small creeks provide open feeding surfaces and an abundance of invertebrate prey. Black needlerush and tall marsh vegetation provide cover and nesting for *marsh wrens*, *clapper rails*, *black ducks*, and less common marsh residents, such as the *Northern harrier*. The *Spartina* grasses provide dense cover and nesting habitat for species such as *seaside sparrows* and *rails*.

What may appear to the ordinary eye as a homogenous marsh (opposite, top), actually may house a number of smaller "pockets" of diverse habitat. An extensive salt marsh may contain tide pools, shrub thickets, and upper marsh plant communities within it. It is this diversity of habitats which provides for higher use by wildlife. The subtle color differences in the aerial view of a marsh (opposite, right) indicate different habitat "patches" or communities.

Marsh Profile

Estuarine Deep Water

Spring Tide

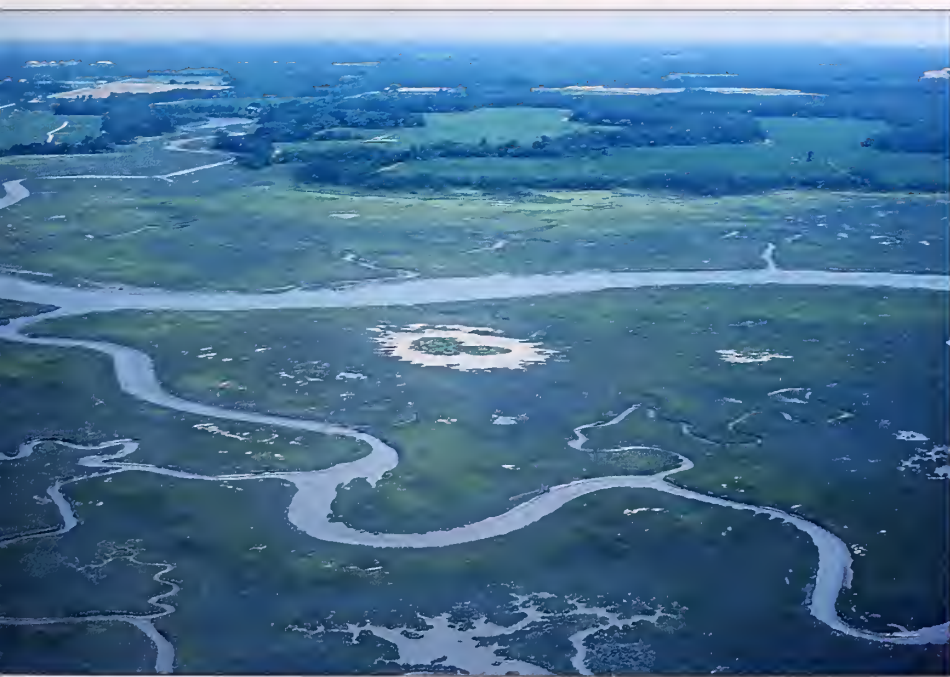
High Tide

Low Tide

Aquatic Bed



Dwight Dyke



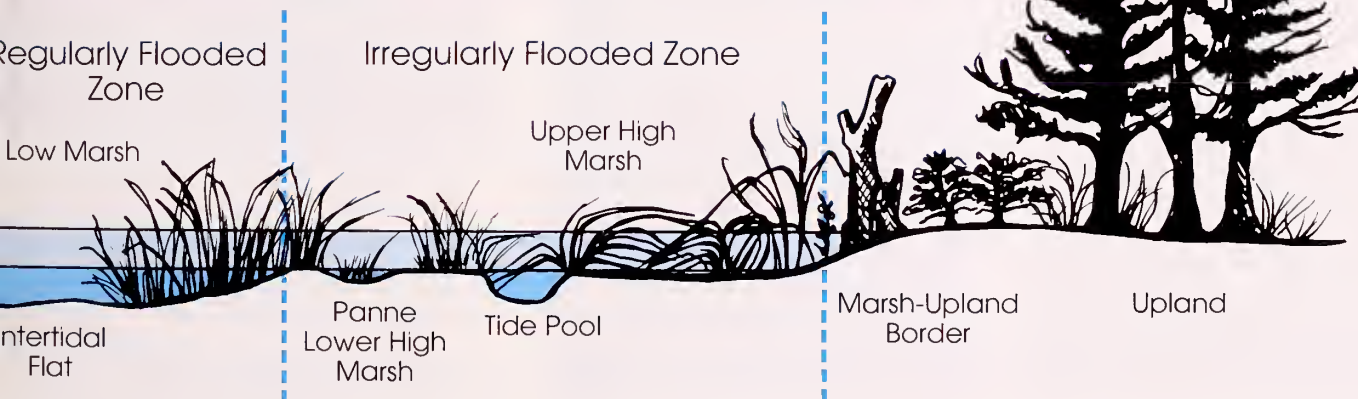
Walter L. Priest, III

pools and mudflats during their critical migratory journeys up and down the coast.

Moving inland, the *low marsh* provides the next functional zone of habitats. Saltmarsh cordgrass, black needlerush, and wet sloughs with mixed vegetation typify the community of the low marsh zone. This zone is inundated at high tide, but several bird species depend on this area for nesting and foraging. Clapper rails and marsh wrens are two obligate marsh breeders that weave their grassy nests in among the high plant stems safe from tides.

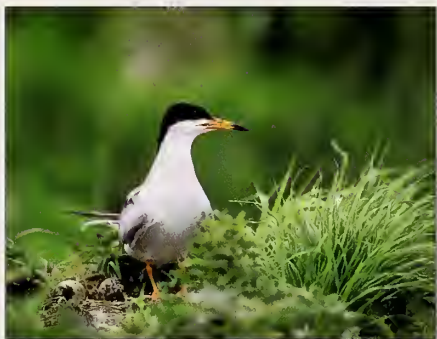
Within the low marsh vegetation community, black needlerush harbors some of the highest numbers of marsh birds, because it supports four of the most abundant obligate marsh breeders in their highest densities: clapper rails, Virginia rails, seaside sparrows, and marsh wrens. Living a life of secrecy, these are the voices of the marsh, but seldom the visions. Many have heard the applause of the rails, never to catch their form. And even more profound is the number of nests one can find that belong to the marsh wren, but never the one that contains the eggs.

The third functional zone is the *high marsh* zone. This area may be



inundated during a spring tide, but is basically characterized by a vegetative community consistent with higher and drier areas. Saltgrass and saltmeadow hay are the common grasses of the high marsh. More importantly, however, this zone is home to marsh shrubs commonly known as saltbush. In addition, dead tree snags often occur in the high marsh, an indicator of a receding upland. The presence of shrubs and dead trees presents nesting and foraging opportunities for additional bird species that would not be found in marshes without these habitats.

In the 20-marsh study conducted in the Bay, bird species richness was found to be highest in the high marsh zone. In other words, of 105 species detected across all marsh habitats, nearly 50 percent were



Rob Simpson



Lynda Richardson

found in this zone. Most of these were associated with the saltbush component.

The presence of shrubs and dead trees offers additional nesting habitat above the high tide line, as well as prominent perches from which to sing or to search for prey.

Song sparrows and eastern kingbirds are two species we do not readily associate with marshes, yet



Above: The great blue heron is the largest wading bird in Virginia, and numbers over 8000 pairs in the Coastal Plain. Equally at home around a farm pond or inland lake, the great blue utilizes marshes and other aquatic habitats to locate food. It nests both in mixed heron colonies on the barrier islands, as well as in strictly great blue heron colonies found in beaver swamps and on inland creeks. Like other wading birds, its nest appears as a relatively flat platform of loose sticks through which the eggs can often be seen. Its diet consists of assorted fish, other birds' nestlings, snakes, frogs, and even small mammals.

Above left: Our only truly marsh-nesting tern, the Forster's tern exists in relatively low numbers in Virginia, and is confined to marshes and shell bars along the seaside Eastern Shore and some of the Bay marshes.

Left: Laughing gulls nest in great numbers in the large, homogenous marshes of the seaside Eastern Shore and upper Bay. Around 40,000 nesting pairs have been located in Virginia marshes.

the presence of shrubs and snags have granted them access and enabled them to capitalize on marshes as another productive environment.

Probably the most conspicuous resident of the high marsh zone is the red-winged blackbird. Perched high in a bush with his red epaulets in the air, the male courts his mate and offers to the marsh community a flash of color in an otherwise drab environment.

Finally, as one proceeds up the landward gradient, we encounter the marsh-upland transition zone. The common plant of this zone is wax myrtle, an evergreen shrub. Deciduous saplings and live pines make up most of the remainder of these border habitats that separate the marsh from upland proper.

From a regulatory point of view, this is something of a no-man's-



Joe McDonald



Rob Simpson

Above: The marsh wren is a common inhabitant of coastal marshes, famous for its exuberant, rattling song. It is seldom seen, however, except for brief glimpses of its courtship displays.

Right: The Eastern kingbird has capitalized on the characteristics of the high marsh zone, making maximum use of dead snags, stumps, and small trees to nest, court their mates and perch from to scan for favored marsh insects.

Far right: A marsh resident user, the barn swallow usually nests offsite under the eaves of a barn or bridge, then sorties out to find food over the marsh.

land, sharing characteristics of both marsh and upland. However, from a wildlife point of view, these habitats open the door for many upland species to access marsh habitats.

In the same way hedgerows provide cover between fields and forests, these transition zones offer safety and food to upland visitors moving back and forth from the marshes. Sedge wrens and common yellowthroats are two species most frequently associated with these habitats around marshes, although there are many species that occur here strictly as visitors from the adjacent uplands.

With a knowledge of the physical characteristics of marshes, it becomes much easier to understand how the associated bird communities can be so different from one marsh to the next. For, as different as individual marshes are from each other, so are the requirements of individual bird species from each other.

Only a few species are obligate marsh breeders that will not be found in other habitats. Seaside sparrows, marsh wrens, willets, boat-tailed grackles, black ducks, and clapper and Virginia rails are some examples. Primarily low marsh species (except the grackle),

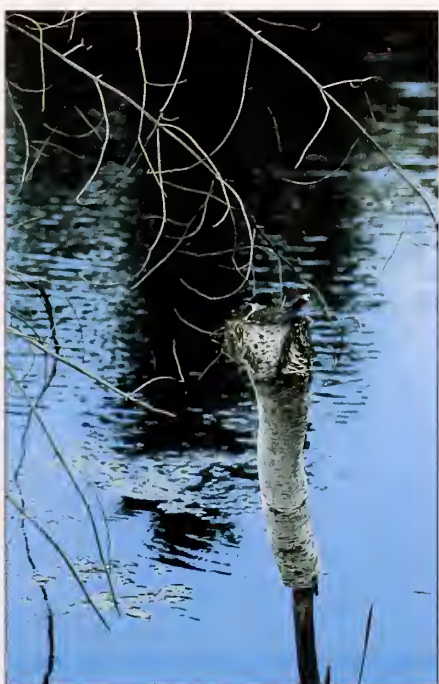
one might expect to find these birds in most homogeneous cordgrass and needlerush marshes of the Eastern Shore and the Bay.

However, other species utilize marshes as specialists of one type or another, and therefore depend on certain marsh characteristics. Snowy egrets seem to be habitat specialists. They forage primarily in tide pools. Likewise, almost all of the migrating shorebird species seem to favor tide pools for foraging over other habitats.

Tide pools are something of a marsh buffet. The tide brings in lots of little fish, crabs, and assorted invertebrates and then leaves them stranded in these pools that become landlocked as the tide recedes. Birds arriving at these pools never know what to expect, because the menu changes with each rise and fall of the tide.

The concern with this situation is that tide pools seem to be a characteristic of only the larger marshes, or marshes greater than about 10 acres in size. So, large marshes once again seem to warrant special attention as habitat for birds.

Another bird, the marsh hawk, or northern harrier, appears to be dependent on extremely large marshes, those typically greater than 100



Rob Simpson



Rob Simpson



Thanks to the yellow-crowned night heron (above), we now realize that the protection of the marsh alone may not be all there is to habitat conservation of marsh-associated species. This heron depends on a variety of marsh crabs for its subsistence; yet, it depends equally as much on certain pine tree upland habitats close by for successful nesting. **Top right and opposite:** Shoreline stabilization, and ditching and dredging operations have greatly reduced the suitability of our coastal plain to wildlife by destroying the natural transition from upland to wetland, as well as increasing erosion and reducing water quality.

acres in size. The harrier can be thought of as a specialist regarding marsh size. As a top predator, it requires a large foraging area in which to locate food, thereby relegating it to only the largest marshes for nesting. This bird nests on the ground on mounds of vegetation most often hidden in needlerush. Because of its narrow breeding distribution and the paucity of large marshes, harriers are listed as a threatened species within the state.

Some species are actually prey specialists. The yellow-crowned night heron is a resident marsh user that depends on crabs for its diet, particularly fiddler crabs and mud crabs. It must, therefore, nest close to where it can find food.

The significant point about this species, however, is that it provides an excellent example of the importance of upland habitats adjacent to wetlands. Yellow-crowns typically nest in medium-aged pine trees adjacent to creeks and marshes where they can find crabs. To their credit, yellow-crowned night herons do not require large marshes in which to forage. A marsh is sufficient if the crabs are there and it is close to a nesting site.

However, the stronghold for this

species distribution exists in many of the urban and residential areas around the Bay, particularly the Hampton Roads area. This area tends to contain an abundance of the type of nesting and foraging complexes that yellow-crowned night herons prefer. A problem occurs, however, when waterfront landowners elect to bulkhead or otherwise alter the shoreline, resulting in the destruction or degradation of a valuable marsh that was providing food for night herons nesting nearby.

A similar problem exists when pine trees used for nesting are cut down. Even though the nearby marsh may remain intact, the next nearest nest site now may be too far away for the marsh to be of use any longer. Either way, these birds lose.

Birds must have a place to live, as well as a place to eat. And when these two places represent different habitats, it becomes more difficult for us to evaluate the effects of our land-use decisions.

The situation involving the yellow-crowned night heron is not unique to this species. On a larger scale, the filling and draining of marshes, the construction of piers and bulkheads and marinas, and the

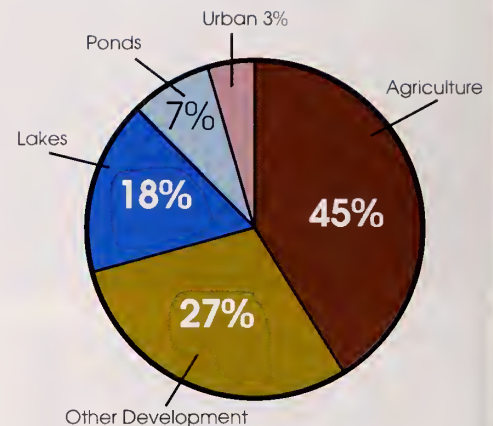


Walter I. Priest, III

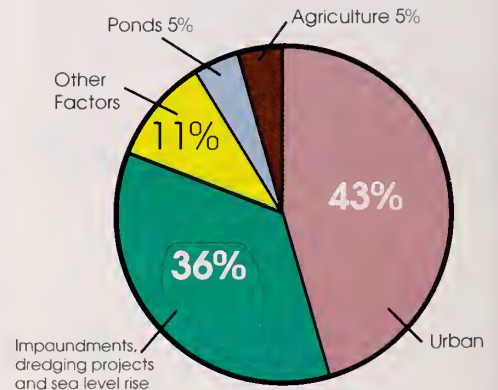
Wetland Trends In Virginia

Between 1956 and 1977, over 63,000 acres of Virginia's coastal wetlands and inland vegetated wetlands were lost. However, since the 1972 Virginia Tidal Wetlands and Federal Clean Water Acts were passed, the annual loss of wetlands has been reduced significantly. (Data below courtesy of USFWS and EPA.)

Causes of Inland Vegetated Wetland Losses



Causes of Coastal Wetland Losses

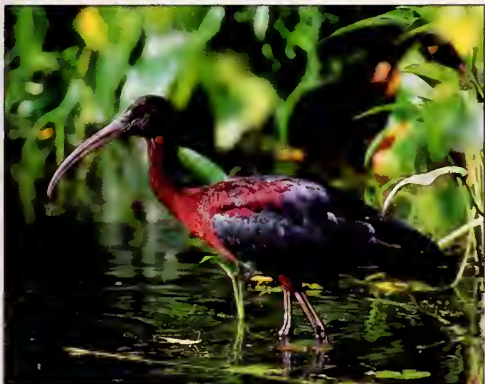




Walter L. Priest, III



Lynda Richardson



John Heidecker

Only 25 nests of the **Northern harrier** or **marsh hawk** (middle) are known to exist in Virginia. These birds seem to be dependent on large marshes greater than 100 acres, and their nesting areas are restricted mainly to the Eastern Shore and the western side of the Chesapeake Bay.

The **glossy ibis** (above) was a rare bird in Virginia prior to the 1970s; however, its range has been extending steadily northward and now birds are breeding all the way up to New England. Here in Virginia, they nest in the high marshes and often in mixed heronries.

The **red-winged blackbird** (right) is a common breeder in coastal marshes. Males often form large flocks during early summer and fall, feeding in upland areas and roosting in the marshes at night.

continuing degradation of upland areas associated with marshes will continue to stress the bird communities associated with these areas.

The problems facing declining songbirds that nest in our mature forests may not be very different

from the problems that will soon be facing our marsh birds. Habitat fragmentation or outright habitat loss is becoming a common theme among wildlife communities everywhere.

As a result, it will become increasingly more important for state and federal regulatory authorities to adequately evaluate proposals for marsh alteration. As for which habitats should receive top priority, that answer is still unclear. All else being equal, bigger marshes appear to be better marshes in terms of supporting a greater variety of birds. However, marsh area alone is not a good indicator of the proportions of marsh vegetation. So, a homogeneous large marsh may support less bird diversity than a smaller, heterogeneous marsh.

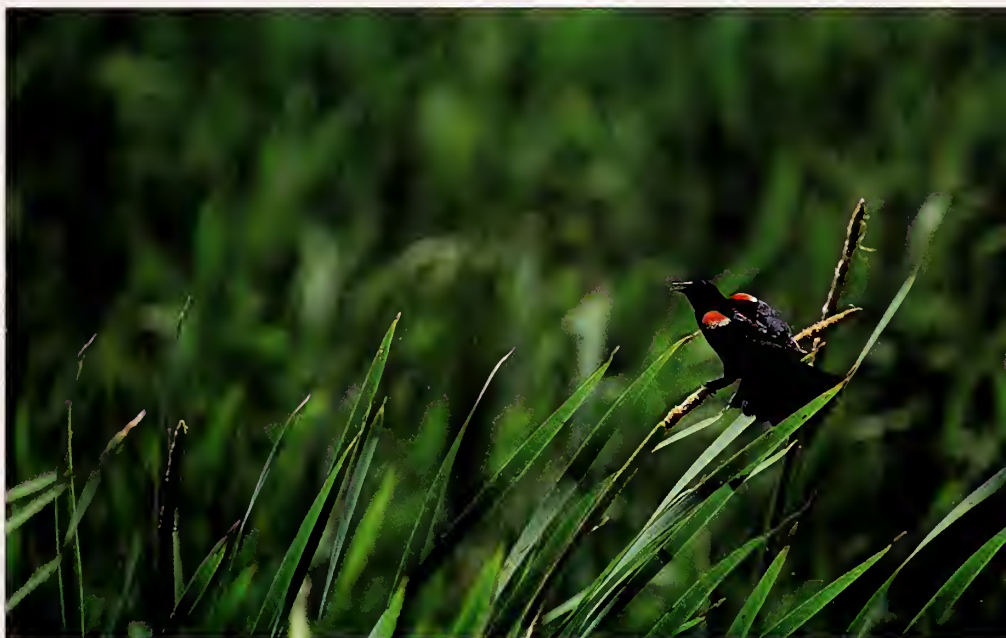
Perhaps even more important is the use of this information in the evaluation of wetland mitigation projects. Creating small replacement marshes elsewhere as mitigation for fragmenting mid-sized or larger marshes may not replace lost wildlife values. Given the interrelationship between the physical makeup and size of the marsh and its associated bird community, it is difficult to imagine how one could readily or easily recreate a situation which would maintain the original wildlife community. On the other hand, with additional information

on particular species of concern, perhaps marsh mitigation could be a tool to improve or provide additional habitats for these species.

At the turn of the century, the ditching and draining of marshes to control mosquitoes was credited as having done more to upset the ecological relationships of our coastal marshes than any other human event. Now, almost a hundred years later, we are living a dangerous love affair with waterfront property, and ironically risking the same ecological catastrophe as our predecessors.

The problem is that we are still learning about the needs of wildlife which depend on coastal marshes for their survival. We do not completely understand their complex and diversified needs for coastal habitats, and we risk irreversible and regrettable loss of wildlife through our ignorance.

Unlike many other wildlife/human interactions, however, with coastal marshes we still have time to compromise and reach a balance without losing any species. Nevertheless, in the final analysis, the survival of coastal marsh wildlife is dependent on the progressive, compassionate, and far-sighted thinking of those making land-use decisions about the remaining remnants of wildlife habitat. As usual, the decision is our own. □



Lynda Richardson



Nongame and Endangered WILDLIFE • PROGRAM

VIRGINIA DEPARTMENT OF GAME AND INLAND FISHERIES

This article was adapted from a technical report entitled "The Influence of Marsh Size on Marsh Value for Bird Communities of the Lower Chesapeake Bay" by Dr. Bryan Watts of the College of William and Mary. His project was funded through monies appropriated under the Coastal Zone Management Act, administered by the National Oceanic and Atmospheric Administration (NOAA) Office of Ocean and Coastal Resource Management. This grant program is coordinated and administered in Virginia through the Department of Environmental Quality (DEQ) (formerly the Council on the Environment).

Dana Bradshaw is a nongame biologist with the Virginia Department of Game and Inland Fisheries.



Rob Simpson

The *seaside sparrow* is restricted to coastal marshes in Virginia, building a concealed nest of grasses and sedges either laced to the stems of marsh plants or placed among the branches of the shrubs in the high marsh zone.

The Work Is Not Over...

*M*uch work is ongoing to learn more about Virginia's coastal marshes and the wildlife making their homes in them, in order to ensure their health and protection in the future. With the help of the Department of Environmental Quality's Coastal Resources Management Program, which administers grants from the National Oceanic and Atmospheric Administration's (NOAA) Office of Ocean and Coastal Resource Management, the following projects have been funded:

- *A two-year study in Northampton County on the Eastern Shore to help identify the habitat needs of migratory birds in the area. This information will be vital to land-use planning on the Eastern Shore and the conservation of migratory songbirds and their habitats.

- *Aerial and boat surveys of barrier island and marsh-nesting waterbirds. These yearly surveys will help ensure the protection of sensitive nest sites from disturbance and land alteration.

- *Active land-use planning for long-term bald eagle management within the Chesapeake Bay.

- *Acquisition of marshland on the North Landing River and beach and wetlands in Mathews County to protect the biodiversity of sensitive habitats and provide environmentally compatible public access.

- *A study of the use of coastal wetlands by rare, threatened and endangered species.

- *An up-to-date comprehensive map of wetlands in Virginia. This map will improve our management capabilities and

With more than 2,000 pairs in Virginia, *ospreys* are a common sight along the lower Bay and its tributaries, having rebounded from severe population losses from DDT. Although they dine almost exclusively on fish, ospreys are not so picky about their nest sites. Where once they chose snags and large trees along the shoreline, over two-thirds of their nests now exist on man-made structures in the Bay, ranging from ball park lights to chimneys, boat docks, buoys and channel markers.

provide vital information for land-use planning.

- *Construction of wetlands walkways in Norfolk and Newport News.

- *Development of educational training materials for Local Wetlands Boards.

- *Additional habitat engineers to increase wetland permit inspection and compliance checks.

- *Development of a scheme for classifying non-tidal wetlands in order to protect them.

The projects listed above are the collective efforts of federal and state agencies and local conservation groups working hand in hand together. The Virginia Department of Game and Inland Fisheries, Virginia Marine Resources Commission, Department of Conservation and Recreation, The Nature Conservancy, the College of William and Mary, the United States Fish and Wildlife Service, and the Virginia Institute of Marine Science are all part of this effort to increase our understanding and appreciation of Virginia's coastal marshes.

For more information regarding any of these projects, please contact Laura McKay at the Virginia Department of Environmental Quality, 202 N. 9th St., Suite 900, Richmond, VA 23219, phone 804/786-4500.



Lynda Richardson

Virginia Wildlife Gift Catalog

Virginia Duck Stamp Print

Help wildlife and make a valuable investment at the same time...buy a 1993 Virginia Duck Stamp Print!

Funds generated from the sale of this year's Virginia Waterfowl Conservation Stamp and Print of black ducks by Bruce Miller will be used for the conservation of waterfowl in Virginia. This limited edition print is available from fine art galleries around the state or by contacting Sport'en Art in Sullivan, IL at 1-800-382-5723. Overall size: 12"X14."

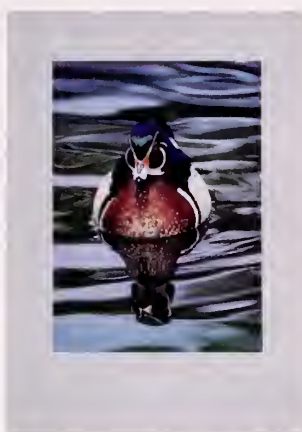


Order any of the four full-color posters featured on this page (barred owl, white-tailed deer, wood duck, or Endangered Species) for \$8 each. Just send your check made out to the Treasurer of Virginia and specify the number and kind of posters ordered to: Virginia Wildlife, Poster Offer, VDGIF, P.O. Box 11104, Richmond, VA 23230-1104.

Poster Specifications:

Endangered Species poster: 18" X 24"

Virginia Wildlife posters: 19 1/2" X 27 1/2"



Virginia Wildlife posters

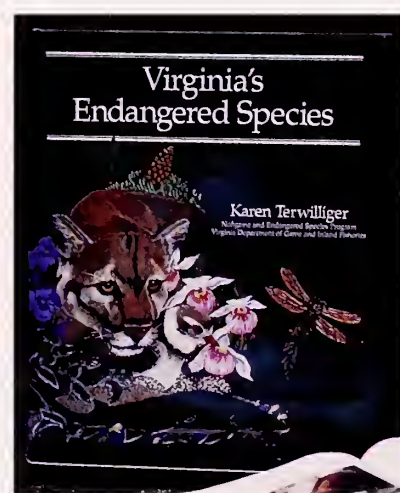
Virginia's Endangered Species

Produced by VDGIF along with other state resource agencies, this 675-page book with 229 color plates, 331 black and white figures, two appendices and three indices is the definitive guide for the nature lover in your family wanting to know about Virginia's rare plants, fish, reptiles, amphibians, mammals, invertebrates, and birds.

Available for \$32.95 (softcover) or \$59.95 (hardcover) plus 4.5 percent sales tax and



\$3.50 shipping and handling charges (per book) from: McDonald and Woodward Publishing Company, P.O. Box 10308, Blacksburg, VA 24062-0308. Phone: 703/951-9465.





Sojourners

Virginia's newest state park at Kiptopeke on the Eastern Shore is a rare place to observe sky-weary travelers on their way south for the winter.

*...for I am a stranger
with thee, and a
sojourner, as all my
fathers were.*

Psalms 39: 12

distant clamor of voices and look up to see that "V," slightly unsteady as though written by a child's hand.

In the migration of birds, we recognize a parallel movement in our own lives; moving always from a past we cannot alter to a future we can but imperfectly detect, hoping that our reason and our faith will lead us home. We feel compassion for travelers with hollow bones.

One of the best places to see and study migratory birds is the newly created Kiptopeke State Park on the tip of Virginia's Eastern Shore. Every fall, many birds (mostly songbirds and raptors) which have spent the spring and summer breeding in the Eastern United States and Canada, stopover at Kiptopeke on their way to their southern wintering grounds in the tropical areas of New World (or neotropics), which are located in the Caribbean Islands, Mexico, Central and South America.

Why is Kiptopeke such a reliable stopover point on this migration route? There are two main reasons. The first is that it is located on the southern tip of the Delmarva Peninsula. This strip of land acts like a funnel for birds following the Atlantic coastline in their migration. As the land narrows at the southern tip, the birds are concentrated into a fairly small area.

The park itself contains a wooded corridor, a swath of mixed pine, hardwood and shrubs, which provides the birds with cover and a plentiful food source of insects and fruits. This allows them to stop and refuel before making the long journey across the Chesapeake Bay.

These two factors also make Kiptopeke State Park an ideal place for bird banding. The funnel effect insures that a great variety of species will be represented, and the corridor provides a stable, predictable area for bird congregation. Scientists have been taking advantage of this situation since 1963, when the U.S. Fish and Wildlife Service (USFWS), the Virginia Society of Ornithology (VSO), the Audubon Society, and many other dedicated conservationists created a songbird banding station there.

In 1977 a second station was established for banding the many raptors passing through the area. Created and manned by a handful of VSO

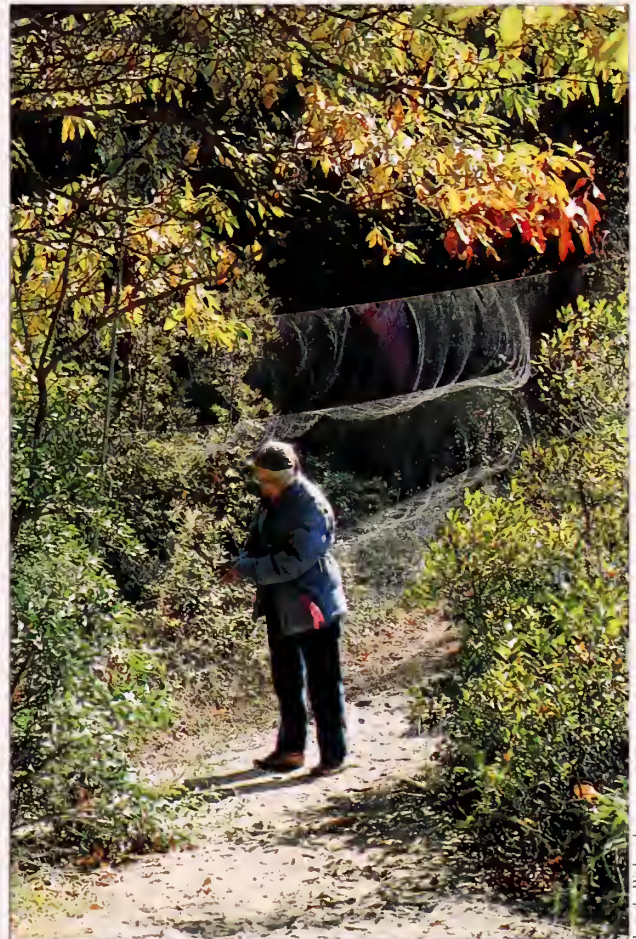


Rob & Melissa Simpson

Above: The common yellowthroat is a resident breeder on the Eastern Shore, though additional yellowthroats traveling down from the North do migrate through Kiptopeke. Right: Doris Smith tends to a mist net designed to gently and harmlessly capture songbirds for banding. Doris and her husband Walter are veteran VSO members and were part of the original team which created the Kiptopeke banding station some 30 years ago.

by Sarah White

It is one the most powerful metaphors of our common emotional life: migrating geese moving through an autumn sky. It is a common sight, often seen without being noted. But, at least once this fall each of us will hear the



Lynda Richardson



Doris Smith gently removes a **yellow-rumped warbler** from a mist net. Formerly called myrtle warblers, these birds feast on the berry-laden myrtle bushes surrounding the bird banding site, and are by far the most abundant bird banded at Kiptopeke.

members and volunteers, this site consistently records the highest numbers of accipiters (woodland hawks), falcons, (such as the peregrine, American kestrel and merlin), and harriers in Virginia. The Virginia Department of Game and Inland Fisheries (VDGIF) supports both these efforts with limited funding and technical assistance.

The songbird banding process begins with the setting up of fine-meshed "mist nets." The appearance of these nets is best captured in a story told by retired VDGIF biologist Fairfax Settle, who assisted in the first banding programs on the Eastern Shore. Settle tells of a sweltering day in early September when the mosquitos were flocking around the banders like hot and thirsty children around a snocone stand, and one of the local watermen came up

the path to the banding station. With a look of utter bewilderment on his face, he sputtered: "Who in the heck has been playing badminton up in those myrtle bushes?"

Once these odd-looking contraptions are set up, they are all but invisible to the birds and many will fly into them as they search for food. Once a bird is entangled in the nets, which are specially designed not to injure birds, it does not have long to wait. Trained VSO members and other volunteers walk the net line every 30 minutes, and during the morning hours when the birds are most active, the nets are checked more frequently. The bird is then gently removed from the net, placed in a holding cage and taken to the banding station. There, an experienced birder examines each bird's feathers for coloration, shape and



Lynda Richardson

Walter Smith displays a **sharp-shinned hawk** (and visible evidence of its sharp talons), the most common raptor migrating through the area.



Lynda Richardson

Walter Smith performs the painstaking duty of identifying, recording sex and age, and banding each bird before it is released to continue its journey south. In 30 years, over 225,000 birds representing 151 species have been banded at Kiptopeke, providing valuable global information regarding the population and migration patterns of our neotropical migratory birds.

wear, and determines its species, age and sex. This information is recorded and the bird is fitted with a small band inscribed with a unique number before being released.

The wealth of information gathered from the 225,000 birds representing 151 species which have been banded at Kiptopeke is evaluated in the context of global migration patterns. Each year's data is sent to a bird banding lab operated by the USFWS in Laurel Maryland, which keeps comprehensive records of the results of all bird banding efforts in the United States.

Viewed over time, this information reveals trends in bird populations and migrations.

One recent trend is particularly disturbing: a steady decline in the populations of many neotropical migratory birds. Ornithologists think that a combination of factors is responsible for this decline. Since these birds spend their lives in three distinct habitats—the woodlands and meadows of North America, the wooded corridors of their migration routes, and the rainforests of the tropics—they are vulnerable to changes in any one of them.

Sadly, all of these areas are currently being damaged or eliminated. It is a well-known fact that the tropical forests are being decimated at a horrifying rate and that ecologically devastating pesticides which have been banned for use in this country are still produced and shipped to these regions where they are heavily used.

The corridors along the Atlantic coast are in constant danger of being cleared to make way for more



The sharp-tailed sparrow is a rare find at the banding station, traveling as it does through marshes instead of the shrub, tree, and beach habitat of Kiptopeke; photo by Rob Simpson.



human activities, such as restaurants, hotels, and housing developments. And, the forests which serve as a breeding ground for so many neotropical birds are vulnerable to a phenomenon called forest fragmentation, which occurs when alteration of habitat, such as a road or a power line or a small clearing, cuts into the body of a forest and changes its shape. When this happens, one large forest is, in effect, fragmented or broken into two or more smaller ones and vital habitat is lost to the many birds which require deep, continuous forests to nest and breed in.

Eager to preserve these remarkable birds, and the innumerable species that share their habitats, conservationists have raised a cry of alarm. But for the average person, often numbed by documentaries, public service announcements, leaflets and articles, such cries may have lost their urgency. What is needed are opportunities for direct

contact with the environment and the biologists trying to save it.

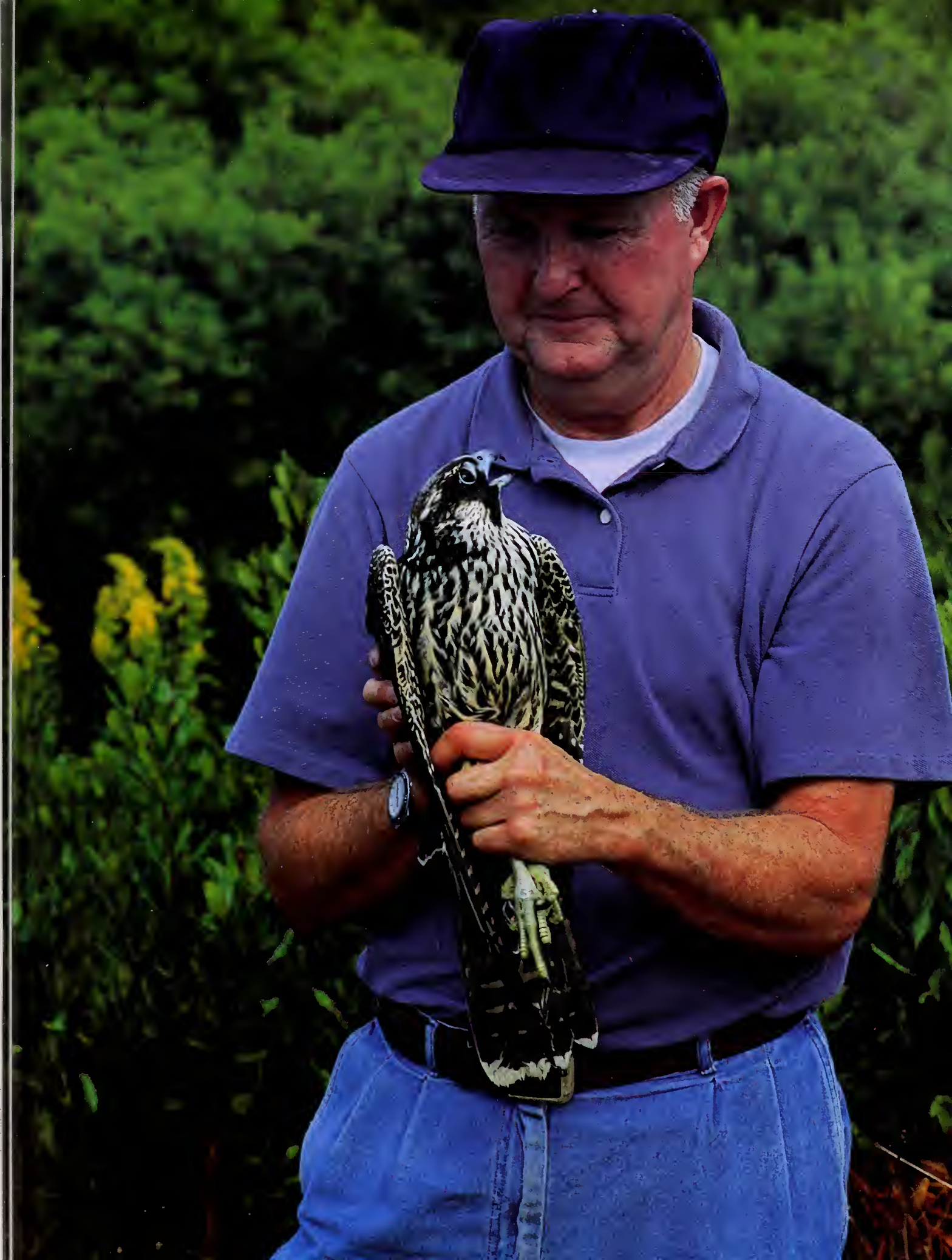
On October 9 and 10, Kiptopeke State Park will be the site of such an opportunity. State and federal wildlife agencies, private conservation groups and local residents have worked together to plan the first Eastern Shore Birding Festival. Guided tours of the park and the banding stations will be conducted by expert birders, and the nearby Eastern Shore wildlife refuge will be explored by bicycle, hiking, and canoe. Activities for both children and adults will highlight the birds of the area, and programs will target efforts to conserve their habitats.

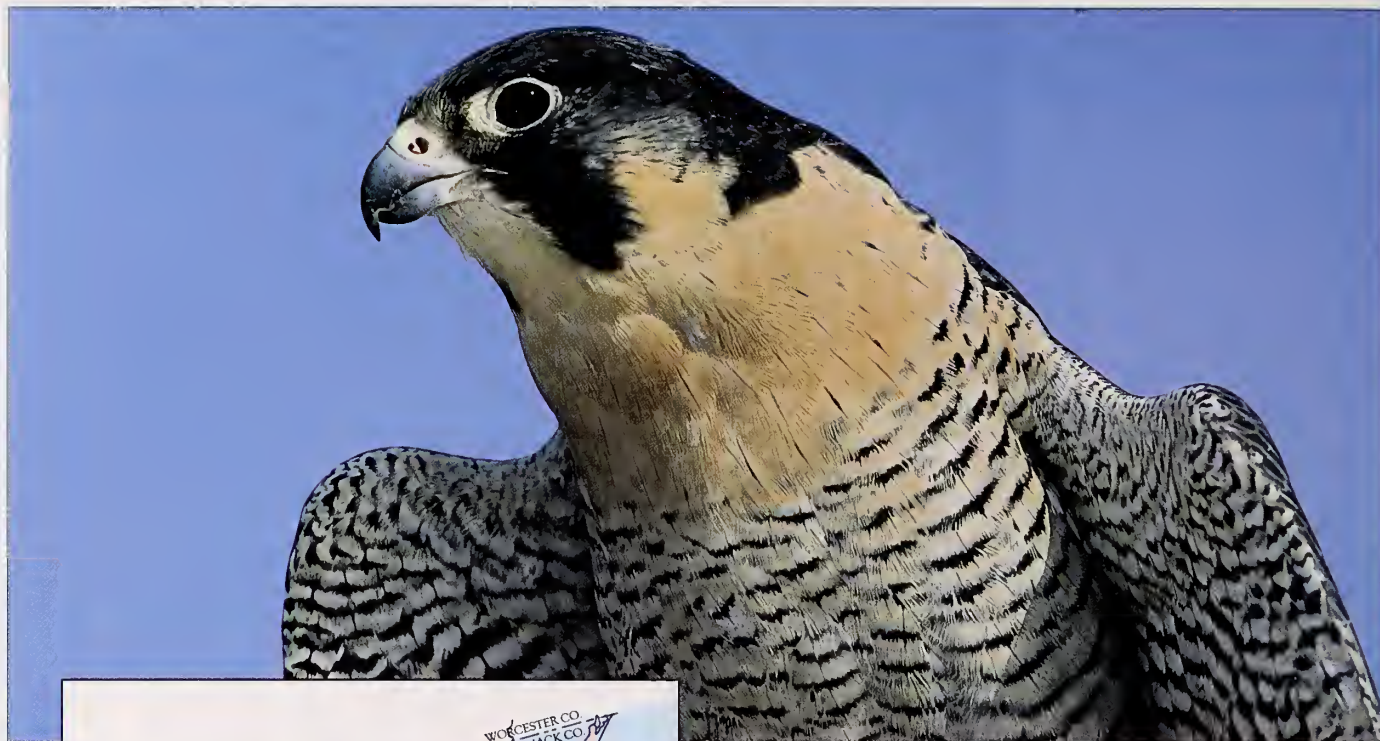
As much as the visitors will learn from their guides (and that will be a great deal), the best teachers will be the park itself and the birds which fill it. The cerulean warblers searching for insects among pines whose branches are the green of old monuments; the scarlet tanagers drawn

Above: Dr. Mitchell Byrd untangles an immature Cooper's hawk captured in a mist net. Eighty-five percent of the birds banded at Kiptopeke are young of the year, and Cooper's hawks are the second-most commonly banded accipiter there, as they follow the coastal migration route of their prey. Right: The endangered peregrine falcon, a welcome sight at the banding station.

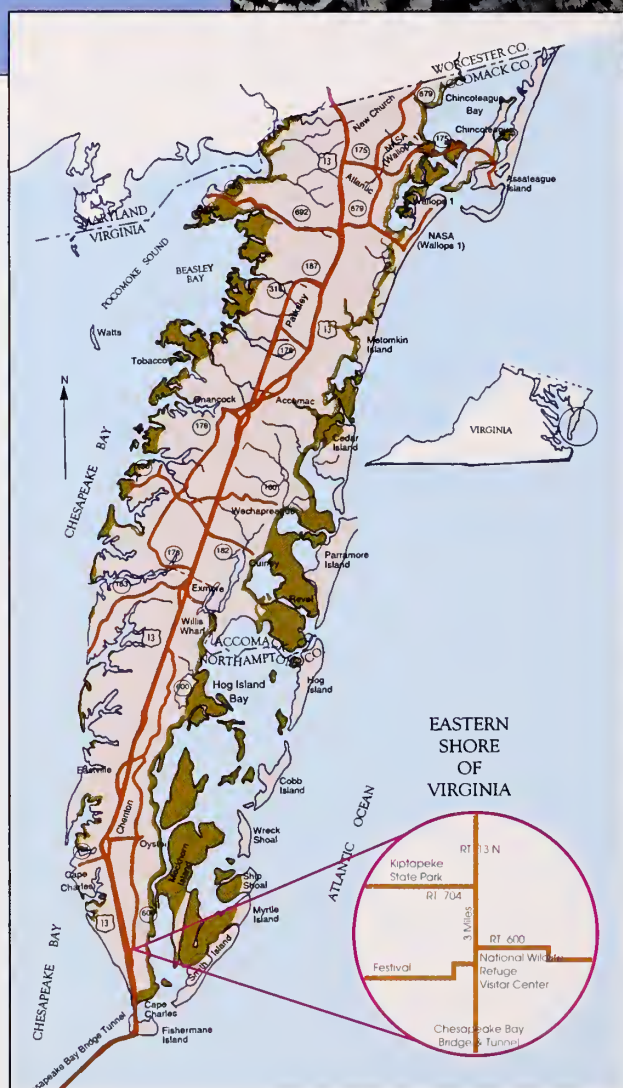
out to the dunes by the waxy clusters of bayberries; the sharp-shinned hawks gaining speed as they pass over the soft meadows and hurling themselves into the woods that hold their songbird prey; the merlins that sometimes trail over the hawk banding station by the hundreds—these birds, travelers like ourselves, have unequalled power to remind us that the dangerous and puzzling world we move through is also a beautiful and fragile one, and that we must move gently and responsibly to move well. □

Sarah White is a freelance writer who lives in Richmond.





Adult female peregrine falcon; photo by Lynda Richardson



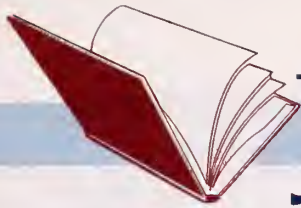
For more information...

The Virginia Society of Ornithology has participated in the bird banding at Kiptopeke since 1963. For more information on the Society and its activities at Kiptopeke, contact Thelma Dalmas, 520 Rainbow Forest Dr., Lynchburg, VA 24502 or Teta Kain at 804/693-KAIN.

The Department of Game and Inland Fisheries is involved in the study and protection of all Virginia's wildlife. For information on our efforts to protect neotropical migratory birds and other threatened nongame species please contact VDGIF at 4010 W. Broad St., Richmond, VA 23230-1104, phone: 804/367-1000.

Kiptopeke State Park is open year-round for bird watching, hiking, picnicking and camping. The best time for observing migrating birds is between the 1st week in September and the last week of October. Try to time your visit with the approach of a cold front to see the greatest numbers of birds. For more information, call or write: Kiptopeke State Park, 3540 Kiptopeke Drive, Cape Charles, VA 23310, (804) 331-2267.

For more information on the Eastern Shore of Virginia Birding Festival, contact the Eastern Shore of Virginia Chamber of Commerce, P.O. Drawer R, Melfa, VA 23410, 804/787-5622.



Journal

Letters

My family and I have enjoyed reading *Virginia Wildlife* for a very long time. The articles and photography are exceptional. However, I'm especially thrilled over Joan Cone's recipes and find myself turning to her page first. Now I know I'll never be able to part with an issue.

Thanks so much for the pleasure you give us—literary and gastronomically.

Anne D. Williams
Danville, VA

Just wanted you to know how much I enjoyed reading about the hummingbirds in the July issue. We enjoy watching them feed on the feeders we have out for them here.

I am curious to know how they feed their young. I do not believe it was mentioned in the issue.

Mrs. Vernon Via
Martinsville, VA

Thank you for your compliments on the magazine. In response to your question, hummingbirds collect nectar and insects and then regurgitate to feed to their young.



Born to Be Wild

Young Rylee Shull of Berryville knows a good read when she sees one, and mother Dana writes that her daughter is a devoted fan. Rylee obviously has her priorities straight in our book: *Virginia Wildlife* is worth

holding onto; clothes are not. Some kids were just born to be wild.

Winners Announced

Congratulations to the winners of the First Annual Youth Writing Competition for the Virginia Outdoor Writers Association:

Fiction

First Place: Jaran Hunter
Richmond

Second Place: Luciana F. Lopez
Virginia Beach

Non-Fiction

First Place: Clinton Epps
Charlottesville

Second Place: Christina Littlefield
Chesterfield

Virginia's Best Anglers

In the April issue, we inadvertently missed Armistead Peyton of Richmond on our 1992 Hall of Fame list. Mr. Peyton reached Masters level in 1992, having caught 5 citation fish of different species. Our apologies go out to one of Virginia's best anglers! □

Virginia's Endangered Species Book Honored

The American Library Association recently selected *Virginia's Endangered Species: Proceedings of a Symposium*, coordinated by VDGIF biologist Karen Terwilliger, as one of the nation's best government information sources. The Notable Documents panel of the Government Documents Round Table annually singles out what they consider the best of government publications,

based on their quality and usefulness.

Virginia's Endangered Species compiles the work of respected biologists around the state to identify and describe the more than 250 rare and endangered plants and animals in Virginia. With drawings, maps, and color photos to complement the text, this guide is a one-of-a-kind resource, providing information in one 675-page document which is available in no other place.

This book is truly a significant achievement of perseverance and teamwork, and its benefit to the Commonwealth also has been recognized by both The Wildlife Society and Virginia Wildlife Federation.

Copies of *Virginia's Endangered Species* are still available for \$32.95 (softcover) or \$59.95 (hardcover) plus 4.5 percent sales tax and \$3.50 shipping and handling from: McDonald and Woodward Publishing Company, P.O. Box 10308, Blacksburg, VA 24062-0308. Phone: 703/951-9465. □

Blue-banded Pelicans, Anyone?

During the summers of 1992 and 1993, 100 fledgling brown pelicans of the Chesapeake Bay and Maryland were banded to better understand the northward expansion of pelican colonies on the Atlantic Coast. Each bird was banded with a blue plastic tarsal band bearing a white three-character code.

Please report any observation of these pelicans to: David F. Brinker, Maryland Department of Natural Resources, P.O. Box 68, Wye Mills, MD 21679; phone: 410/827-8612, or the Bird Banding Laboratory, Office of Migratory Bird Management, U.S. Fish and Wildlife Service, Laurel, MD 20708.

Keep your eyes peeled for those blue-banded birds! □

By Joan Cone

Tough Shooting - Tender Eating

Evasive and difficult to bag, both ruffed grouse and their sharptail cousins are absolutely delicious. They are far better than chicken or turkey because they are tender, yet have a delicate flavor. These birds are a challenge afield and a delight in the kitchen. Because grouse breasts are so tender, they can be sautéed, roasted or prepared in a casserole as in the following recipe.

Menu

Crappie Paté
Grouse Breasts In Cream Sauce
Oven Baked Orange Rice
Blue Cheese Coleslaw with Pears
No Cholesterol Pumpkin Pie

*Crappie Paté

1 tablespoon lemon juice
 1 package (8 ounces) cream cheese, softened
 1/4 cup bacon bits
 1/4 cup water
 2 tablespoons wheat germ
 2 1/4 cups crappie fillets (about 1.5 pounds, raw) cooked, drained and flaked
 1 teaspoon soy sauce
 1 teaspoon onion salt
 1/2 teaspoon dried dill weed
 1 tablespoon snipped parsley

In large mixer bowl, combine all ingredients and beat until well blended. Press mixture into an oiled, fish-shaped mold or an oiled 3-cup bowl or mold and refrigerate several hours or overnight. Unmold onto a lettuce-lined plate and serve with crackers. Makes 3 cups of spread.

Grouse Breasts in Cream Sauce

2 or 3 grouse breasts, split in half

Salt

1 can (10 3/4 ounces) condensed cream of mushroom soup
 1/2 cup dairy sour cream
 1 can (4 ounces) drained, sliced mushrooms
 1/4 cup grated Parmesan cheese
 1/4 cup chopped onion

Preheat oven to 350 degrees. Sprinkle grouse breasts with salt and place them in a baking dish with skin side up. In separate bowl, mix together the mushroom soup, sour cream, mushrooms, cheese and onion. Spread this mixture over the grouse and bake for 45 minutes to 1 hour or until meat is tender. Baste occasionally with sauce during baking. Serve with the following rice recipe. Serves 4 to 5.

Oven Baked Orange Rice

3/4 cup regular long grain rice
 2/3 cup chopped celery
 2 tablespoons chopped onion
 2 tablespoons melted butter or margarine
 1 tablespoon grated orange peel
 1 teaspoon salt
 3/4 cup orange juice
 1 1/4 cups water

Preheat oven to 350 degrees. Mix the first 6 ingredients together and pour into a greased 1-quart casserole. Heat orange juice and water together in a saucepan to boiling. Add orange juice mixture to casserole and stir. Cover and bake about 45 minutes or until rice is fluffy and tender. Serves 4.

Blue Cheese Coleslaw with Pears

2 tablespoons olive oil
 1 1/2 tablespoons sugar
 1 1/2 tablespoons red wine vinegar

3/4 teaspoon powdered chicken soup base or 1 chicken bouillon cube
 4 cups shredded red cabbage
 1 medium pear, sliced (unpeeled) and cut in 1/2-inch dice
 1/2 cup blue cheese or Roquefort, crumbled

Bring the olive oil, sugar, vinegar and chicken soup base to a boil in small pan with 4 tablespoons water. Place cabbage in a large salad bowl and coat with the warm dressing. Add diced pear and toss well. Sprinkle blue cheese evenly over the top of the salad. May be served warm or made a few hours ahead and refrigerated. Serves 4.

No Cholesterol Pumpkin Pie

1 cup white or brown sugar
 1 tablespoon flour
 1 1/2 teaspoons pumpkin pie spice
 1/8 teaspoon salt
 1 can (16-17 ounces) pumpkin
 1/2 cup egg substitute
 1 can (12 ounces) Milnot
 1 (9 inch) baked pie shell

Combine sugar, flour, salt and spices. Mix with pumpkin. Add egg substitute and Milnot and mix well. Pour into baked pie shell and bake in 400 degree oven 10 minutes. Reduce heat to 350 degrees and continue baking 40 minutes or until filling is firm when knife inserted comes out clean. Makes 8 servings. □

*Recipe is from the *Sea Fare Cookbook*, published by the American Fisheries Society, 1992.

Photo TipS

By Lynda Richardson

Polarize It

Shimmering reds and yellows blazed across the distant hillside as a cool wind drifted down from the mountain. We trudged along a path, thankful for the refreshing breeze and happy to be wandering the autumn woods. Warm from a steady pace, I closed my eyes to enjoy the cool wind lightly brushing my cheeks and eyelashes. Crisp air and the crunching of color underfoot were sure signs that fall was in full swing.

We plodded along the path until the trail widened into a meadow. From there, a clear view of the glowing hillside spilled out before us. I set down my pack and stared, mesmerized by the elegance of color and texture. There was a picture here but the pale blue sky was distracting. Fortunately, I knew just the right piece of equipment for the job.

For this situation, a polarizing filter is the way to go. A polarizer is a grayish filter which comes in a wide variety of sizes. What sets this filter apart from others is that it's actually two pieces of (polarized) glass. After screwing the filter onto your lens (or you can try this by just holding it), one can turn the top part clockwise or counter-clockwise and vary the degree of polarization to your subject.

What does a polarizer do? Well, think about those sunglasses you wear. A polarizer cuts down on reflections and saturates colors by removing reflective highlights. Everyone knows that highlights are particularly prevalent on water as well as in windows or any other shiny, glassy, reflective surfaces. But did you realize that vegetation, such as grasses and tree leaves, is highly reflective?

It's very easy to test this. Simply purchase a polarizer for your fa-

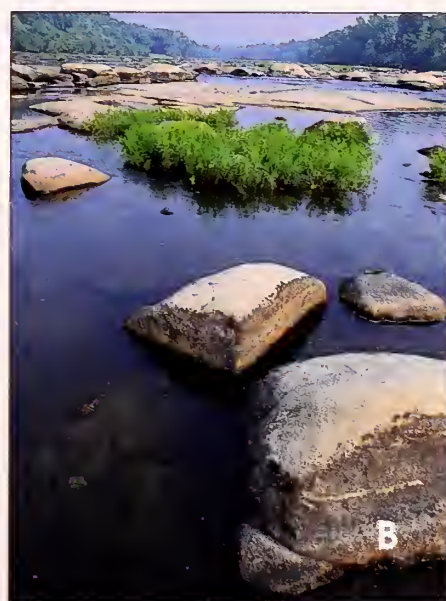
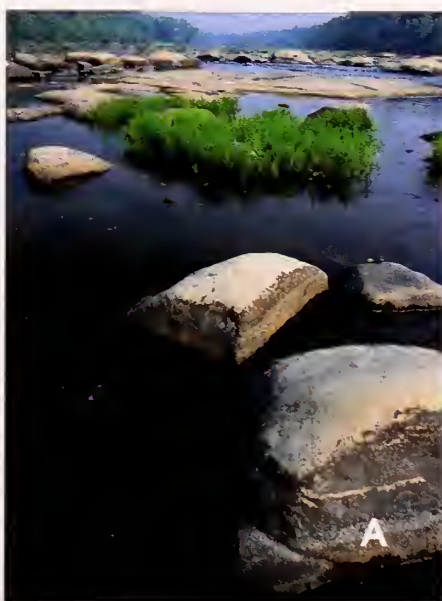
vorite lens and carry it in your pocket for the day. On the way to work when you stop at a traffic light, take out your polarizer and point it at a building with a lot of reflections. Turn the outside glass lens slowly and watch the reflections disappear. Take a walk by the river at lunchtime. Pull out your trusty polarizer and check out the reflections in the water. Do you like the scene with or without the reflections? As you stroll by the park, point your filter at the trees. Well? What do you think?

All of this might sound pretty easy, but there are a few things you need to remember. By using a polarizer, you will cut your exposure anywhere from one to two stops depending on how much polarizing you do to your subject. Be aware that this might not be apparent to your eye or your meter. Some cameras require circular polarizers for correct in-camera light metering, so be sure to check your manual to verify your camera's needs. You must also watch out for over or under polariz-

ing a scene. I sometimes have trouble with my sky because I don't pay careful attention to how the polarizer is positioned. A polarizer's effect varies depending on its relation to the sun. The strongest effect occurs when you shoot at a right angle to the sun.

It's also important for the polarizer to fit the lens. Many photographers have trouble with vignetting when using polarizers on their widest lenses. Vignetting is when the four corners of your image are darkened. You can avoid this by testing a filter before you buy it. Simply attach the polarizer to your lens, stopping down to the smallest aperture (like f16 or f22), and point it towards a bright light source. If you have dark corners, you might need a better quality, or larger polarizer.

If you want to enhance the color of your fall foliage photographs or change the look of your river scenes, give the polarizer a try. It's a fun addition to any pocket, purse or camera bag. □



A polarizer is great for removing distracting reflections from watery scenes. These photographs illustrate the James River shot (A) with polarizer and (B) without polarizer. Photos by Lynda Richardson.



Safety

by Col. William Antozzi, Boating Safety Officer

Danger Lurks in the Depths

So far this year, there have been multiple boating-related drowning deaths, all involving small boats up to 18 feet in length. All of the victims, except one, were young people, all under 29 years old. *Not one of them was wearing a personal flotation device.*

On April 20th at about 10 a.m., a boater brought his 18-foot vessel into Carter's Creek off Crab Point near Weems. His boat was open, with no seats or console. He was standing while steering with a vertical stick-tiller. The operator, 52 years old, had years of experience, but that was of no help when he lost his grip on the tiller and the vessel lurched sharply to starboard. The sudden swing caused the victim to fall overboard. He was not wearing a personal flotation device (PFD), but was able to swim to the boat and grab the rubber fuel line attached to a six-gallon gas tank. The fuel line parted at the bulb, stopping the vessel, but the victim was unable to board the boat. If there had been seats on the vessel, the victim would have been able to steer from a seated position. If he had been wearing a PFD, he probably would not have died.

On May 8th, at about 5:30 p.m. on Betty's Creek at Smith Mountain Lake, the 29-year-old operator of an 18-foot outbound bass boat made a high speed, sharp turn, flinging him and his passenger overboard. Neither one was wearing a PFD. The boat continued to run in circles at full throttle, finally hitting and killing the operator. The passenger, unharmed, was pulled from the water by other boaters. The runaway boat then struck an empty boat and two docks before it was

stopped. The high speed turn was the cause of the fatality; alcohol was involved.

Four young men went out for a sail on a 12-foot Catamaran near Fort Wool on Chesapeake Bay. May 10th was a clear, sunny day with 10 to 15 miles-per-hour winds and 70 degree temperature. At about 5 p.m., one of the boat's two pontoons sunk because of a hole in one end, causing the vessel to capsize and dump its passengers into the water. There were no PFDs on board. All four passengers were able to swim. Two were picked up about a half mile from the sailboat and one was found approximately a mile from the vessel. The vessel operator, age 21, was never found. If PFDs had been carried and used, he would probably have survived.

An overboard 12-foot rowboat with six passengers capsized on May 18th at Lake Montclair, near Dale City in Prince William County. All six passengers were thrown into the water. Five of them made it to shore, but the operator, age 18, went under and did not surface. There were six wearable PFD's on board but none were used.

Three people in a 16-foot canoe were enjoying life on the Chickahominy Reservoir, near Lanexa, in New Kent County on June 4th. It was 9 p.m. and the night was dark. There were no PFDs on board and all three were inexperienced canoeists. They had trouble maneuvering the canoe and continued to go in circles. Two passengers were paddling on the same side, and in leaning toward that side, their combined weight caused the canoe to capsize. All three started to swim to shore, but only two made it. One passenger, age 23, probably per-

ished because he was not a good swimmer. His life could have been saved, however, if he had been wearing a PFD. Reportedly, all those on board had imbibed six or seven beers apiece.

Johnboats are often small and unstable. One such boat on John Sanderson Pond in Amelia County, proved to be no exception. It was only 10 feet long with three youngsters aboard who were using poles for propulsion. The pond was calm on June 17th and the boys were fishing. None of them (one nine-year-old and two 15-year-olds) could swim. Suddenly, one hooked a fish, stood up, lost his balance, tilted the boat, and all three fell into the water. Two passengers held onto the boat, which was swamped but did not sink. The third boy sank and perished.

Since the incidents related above, there have been more fatalities, and there is still the same basic pattern and similar reasons for the deaths. Small, unstable boats play a big part in the tragedies and so do those many sad events which occur when victims are not wearing personal flotation devices. Alcohol continued to play a part in about 50 percent of these fatal accidents.

Since humans are not water-creatures, water is a hostile environment. To cope with the dangers presented by it, boaters should respect the inherent instability of small craft, wear personal flotation devices, save alcoholic beverages for after-boating activities, and learn how to swim.

Free boating safety courses are offered by the Virginia Department of Game and Inland Fisheries, the U.S. Coast Guard Auxiliary and the U.S. Power Squadrons. □

Wrap Up Something Wild For The Holidays



This year, give Virginia Wildlife to all of your friends and introduce them to something wild! Plus, for a limited time only, you can take advantage of our special holiday deal to help you with your gift giving and your budget:

Order 10 or more subscriptions and pay only \$6 for each gift. That's a savings of \$40 over the regular price!

Use the gray card in this magazine for details, and start giving...

Another Sweet Deal From Virginia Wildlife...

Winter Comfort

by Bob Henley

Oder Bob Henley's limited edition print of 950 entitled "Winter Comfort" for \$45 each and get a one-year subscription to *Virginia Wildlife*-free!

See gray card in this magazine for details on ordering. But, hurry and order today! This offer is only good through December 31, 1993!



